

Mr. William Buller U.S. EPA, Region V, 5HR-12

230 South Dearborn Street Chicago, Illinois 60603

December 16, 1992 G E I V E D

DEC 1 8 1992

OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

Dear Mr. Buller:

In accordance with our recent telephone conversations, I have revised the SOP for collecting ground water for CLP analysis using a Geoprobe test vehicle. We believe that by utilizing the methods described in the SOP we can achieve accurate, reproducible results at our off-site sampling points. The SOP is attached for your review. If you have any questions, please get in touch with me.

Very truly yours,

James H. Keith Project Manager

cc: Susan Gard Sam Walde

SOP FOR OFF-SITE GEOPROBE GROUND WATER SAMPLING FOR CLP ANALYSIS FOR THE FORMER AMPHENOL SITE RFI

METHOD DESCRIPTION

In order to avoid placing permanent monitoring wells off-site in the Franklin city right-of-way, ground water samples from the Unit B saturated sand will be recovered through a hollow Geoprobe sampling train inserted to sampling depth by a truck-mounted hydraulic ram. Samples will be analyzed for volatile organic compounds, total metals and total and amenable cyanide as described in the project QAPP approved May 25, 1992. Sample locations and ground elevations will be established by a surveyor and tied into the existing on-site locational grid.

EQUIPMENT

- Truck-mounted Geoprobe ground water sampling system with steel alloy and stainless steel rods
- 2) Screen point ground water sampler
- 3) Stainless steel or Teflon mini-bailer
- 4) Soil sampling point with acetate insert
- 5) Peristaltic pump with battery power supply and Teflon tubing
- 6) Steam cleaner, DI water, Alconox for decontamination

SAMPLING EQUIPMENT AND PROCEDURES

Description of Equipment

The Geoprobe sampler operates by inserting a string of one-inch diameter threaded steel alloy hollow rods vertically into the ground with the aid of a truck-mounted hydraulic ram capable of exerting 15,000 pounds of force. The system has an air hammer attachment to advance the rods into dense or hard materials. Rod sections are three feet long.



Mr. William Buller U.S. EPA, Region V, 5HR-12 230 South Dearborn Street Chicago, Illinois 60603

Dear Mr. Buller:

December 16, 1992 G E I V E D

DEC 18 1992

OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

In accordance with our recent telephone conversations, I have revised the SOP for collecting ground water for CLP analysis using a Geoprobe test vehicle. We believe that by utilizing the methods described in the SOP we can achieve accurate, reproducible results at our off-site sampling points. The SOP is attached for your review. If you have any questions, please get in touch with me.

Very truly yours,

James H. Keith Project Manager

cc: Susan Gard Sam Waldo

SOP FOR OFF-SITE GEOPROBE GROUND WATER SAMPLING FOR CLP ANALYSIS FOR THE FORMER AMPHENOL SITE RFI

METHOD DESCRIPTION

In order to avoid placing permanent monitoring wells off-site in the Franklin city right-of-way, ground water samples from the Unit B saturated sand will be recovered through a hollow Geoprobe sampling train inserted to sampling depth by a truck-mounted hydraulic ram. Samples will be analyzed for volatile organic compounds, total metals and total and amenable cyanide as described in the project QAPP approved May 25, 1992. Sample locations and ground elevations will be established by a surveyor and tied into the existing on-site locational grid.

EQUIPMENT

- Truck-mounted Geoprobe ground water sampling system with steel alloy and stainless steel rods
- 2) Screen point ground water sampler
- 3) Stainless steel or Teflon mini-bailer
- 4) Soil sampling point with acetate insert
- 5) Peristaltic pump with battery power supply and Teflon tubing
- 6) Steam cleaner, DI water, Alconox for decontamination

SAMPLING EQUIPMENT AND PROCEDURES

<u>Description of Equipment</u>

The Geoprobe sampler operates by inserting a string of one-inch diameter threaded steel alloy hollow rods vertically into the ground with the aid of a truck-mounted hydraulic ram capable of exerting 15,000 pounds of force. The system has an air hammer attachment to advance the rods into dense or hard materials. Rod sections are three feet long.

Two special sampling points will be used. The first is a soil sampler with two-foot long acetate inserts (Figure 1). The sampler is capable of recovering a soil core up to 24 inches long and 1.5 inches in diameter. The sampler is installed at the bottom of the sampling string and is advanced with the air hammer. After being advanced for two feet, the sampler is withdrawn and the soil sample removed for description. Continuous soil samples can be collected in this manner.

The second point is a screen point ground water sampler (Figure 2). This sampler is installed at the bottom of the sampling string and is advanced hydraulically or by air hammer to the desired sampling depth with decontaminated stainless steel rods. While driving, the point is sealed from outside contamination. At sampling depth, the sampling string is withdrawn two feet, the 0.0057" screen is exposed, and water enters the sampler. The water can then be retrieved to the surface by a Teflon or stainless steel mini-bailer, or pump. The bailers are 7/16" OD and 20 inches long with a ball and seat.

Sampling Procedures

Based upon previous drilling and Geoprobe work, sampling depth is expected to vary between 12 and 22 feet, the depth being controlled by a layer of material (assumed to be the Unit C till layer) that is very difficult to penetrate by hydraulic force alone. The saturated sand unit appears to be only two to three feet thick in the off-site areas previously investigated, and there is expected to be no zonation of contaminants within the saturated unit.

Two Geoprobe holes will be advanced at each sampling location. The first will be advanced using the soil sampler to collect continuous soil samples. Soil samples will be collected, described and measured by a WWES geologist to determine the stratigraphy of

the sample location. Soil samples will be collected until three to five feet of the underlying Unit C till has been penetrated. The location of the saturated sand will be noted and this information will be used to determine the sampling depth for the screen point ground water sampler. Stratigraphic information will be recorded by the geologist for later incorporation into geologic cross sections. Soil samples will be retained and returned to the site for disposal.

Following completion of the first hole, the sampling string will be withdrawn, and the hole backfilled and sealed with bentonite granules. A second hole will be advanced one to three feet away from the first to a depth at which the bottom of the exposed screen will be just below the saturated sand. The sampling rods will be withdrawn two feet to expose the screen.

Water for CLP volatile organic compounds will be collected by a Teflon or stainless steel mini-bailer. Three bailerfuls of water will be collected and discarded into a plastic container for return to the site and disposal, then the water will be sampled. Water collected in this manner is carefully poured from the bailer into the VOA sample containers. Water for metals, and total and amenable cyanide will be collected by means of a portable peristaltic pump and Teflon tubing inserted down the hollow sampling train (Figure 3). Water is pumped directly into the sample containers. The volatile portion of the sample will be collected first followed by metals and cyanide. Ground water samples for metals will have passed through the 0.0057" screen and will not be filtered after collection.

The sampling methods described allow:

1) Volatiles samples to be collected without subjecting them to air pressures lower than ambient atmospheric pressure by bailing.

- 2) Sufficient sample quantities for metals and cyanide analysis by peristaltic pumping.
- 3) Stratigraphic measurements which will be used to determine sampling depth, and will also be used to determine off-site stratigraphy.

Following withdrawal of the second tubing train, the hole will be backfilled with bentonite pellets, and a steel rebar stake will be installed flush with the ground at the site of the first (soil sampling) point to permit relocation of the sampling point. Sampling point elevations and coordinates with respect to the existing monitoring well system will be established by survey.

Sampling Locations

See Figure 4. Ground water samples are proposed at four locations: between former Geoprobe locations SGP-6 and SGP-7 (PGP-1), south of GNS-4 (PGP-2), along Forsythe Street south of its intersection with Hamilton Avenue (PGP-3), and adjacent to MW-12 (PGP-4). The latter sample will be used as a check against standard screened well and bailer sampling that will also be conducted at MW-12. To assure that the edge of the plume is being monitored at PGP-3, water samples will be collected at several locations in the vicinity and analyzed using the on-board purge-and-trap GC before selecting the sampling point for the CLP samples.

Sample Quantities, Containers and Preservation

Each sample for volatile organic compounds will be transferred to two 40-ml VOA vials with Teflon septa, preserved with HCl to pH<2 and cooled to 4° C. Each sample for metals will be transferred unfiltered into a one liter polyethylene bottle, preserved with HNO₃ to pH<2 and cooled to 4° C. Each sample for total and amenable cyanide will be transferred unfiltered into a one liter amber glass bottle, preserved with NaOH to pH>12

and cooled to 40 C.

Sample Handling and Recordkeeping

samplers will record the date and time each sample is collected, as well as the depth interval from which the sample was withdrawn. All sample containers will have a serially numbered sample tag attached as described in accordance with Section 5.2 of the QAPP. Samples will be immediately placed in coolers on Blue Ice to await shipment. Sample numbering will be in accordance with Section 4.12 of the QAPP. Prior to shipment, Chain-of-Custody forms will be filled out by the field sampling team leader. A copy of each completed form will be retained in a file and the originals will be packed in the shipping container.

OA/OC

1. Equipment Decontamination

All rods will be scrubbed in an Alconox solution, steam cleaned, rinsed with DI water and allowed to dry prior to use. All rods will be changed between holes such that rods will not be reused from sample point to sample point. Teflon tubing employed for the peristaltic pump will be decontaminated between sample points by pumping DI water through it for at least five minutes. The bailers will be cleaned with an Alconox detergent solution, rinsed with DI water and allowed to dry before use.

2. QA/QC Samples

QA/QC Geoprobe samples will be collected separately from on-site monitoring well samples. The following QA/QC samples will be collected for the volatiles:

- 1 equipment blank
- 1 trip blank
- 1 duplicate
- 1 matrix spike/duplicate

The following QA/QC samples will be collected for metals and total and amenable cyanide:

- 1 equipment blank
- 1 duplicate

QA/QC samples will be collected in accordance with Section 4.10 of the QAPP.

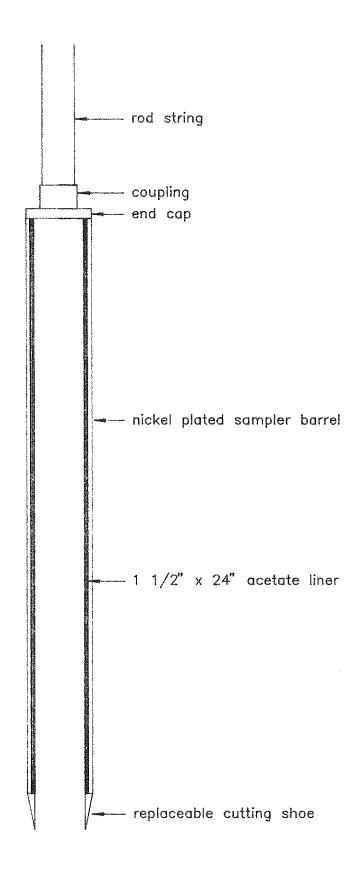


Figure 1. Soil sampler assembly.

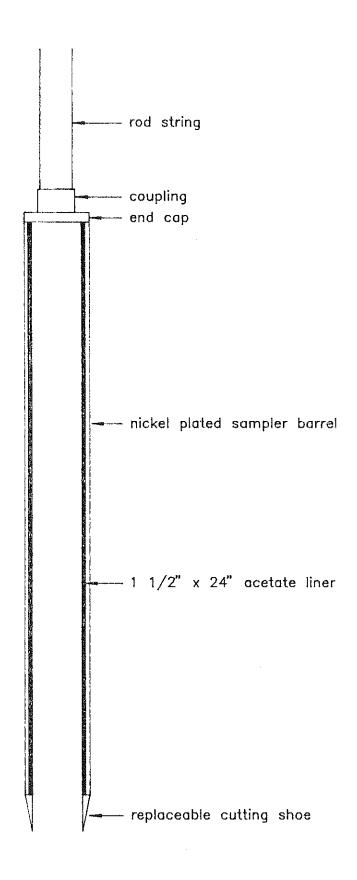


Figure 1. Soil sampler assembly.

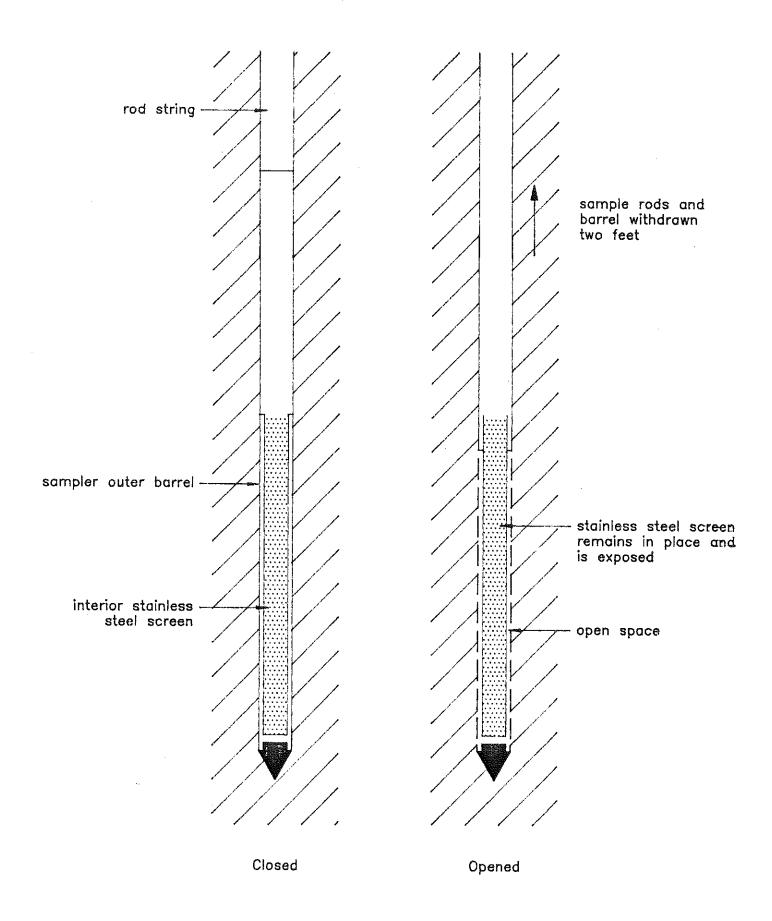


Figure 2. Screened ground water sampler.

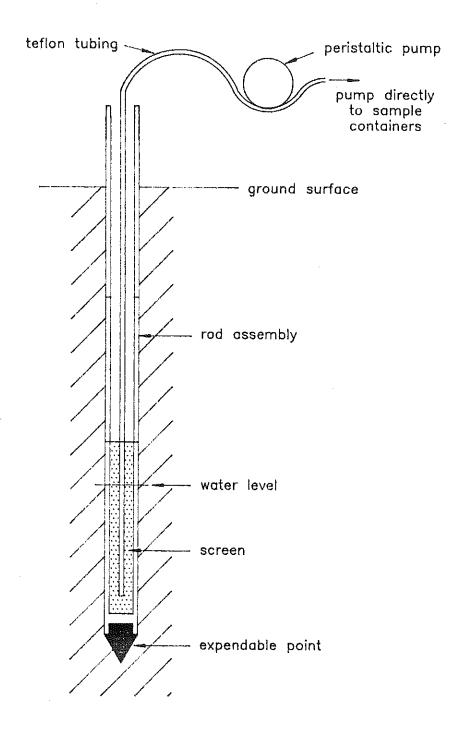


Figure 3. Sampling ground water for metals and cyanide by peristaltic pumping.

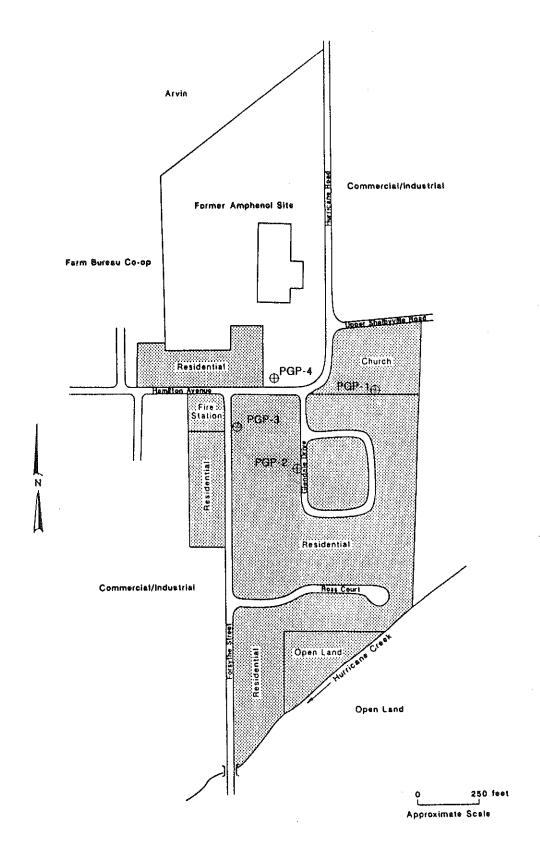


Figure 4. Locations of proposed Geoprobe sampling points.